
Network Message Services

Network Message Services (NMS) uses ISDN signaling capabilities to provide messaging services across an ISDN network. Meridian 1 systems interconnected with PRI or ISL can extend supported message services to all users within that network on a customer basis from a single, central location. Access to NMS and feature activation from the messaging system is transparent to the end user.

X11 release 15

For X11 release 15 and later, Network Message Services supports the Message Center (MC) feature. NMS-MC supports centralized manual message centers that use attendant consoles, Meridian 1 telephones, or ACD telephones as answering positions.

X11 release 16

A second distinct application, NMS-Meridian Mail (NMS-MM), is introduced to provide end-user and calling party access to centralized Meridian Mail services across the network.

NMS functions common to both applications are described here and details specific to each are described later in this module. Differences between Message Center and Meridian Mail functions are described under their respective headings.

Within NMS operations, there are direct message calls and indirect message calls:

- Direct calls are initiated by the user accessing the Message Center to receive messages. Access is allowed by dialing the message facility directly or using the Message Waiting Key (MWK).
- Indirect calls occur when a redirection feature directs the call to a Message Center so the caller can leave a message.

An NMS call has two components: basic PRI call signaling and transaction signaling. The PRI portion of the call is supported by ISDN PRI or ISL and Network Call Redirection (NCRD)—subject to the requirements for PRI calls and the NCRD feature. NMS always uses non-call-associated, connectionless Transaction Signaling messages to turn on/off the user set Message Waiting Indication (MWI) and to transport call information for certain Meridian Mail features, including Call Sender (that is, the transport of connectionless signaling information across the ISDN network).

There are three types of network nodes supporting NMS:

- Originating node. For direct calls, the originating node is the PBX where the calling party resides. For indirect calls, the originating node is the node where the originally dialed party resides.
- Tandem node. This switch can pass transaction signaling messages on to the next PBX. Stations on a tandem node do not have access to Network Message Services functionality.
- Terminating node. This is the PBX where the Message Center or Meridian Mail server resides, and where the call terminates.

NMS supports Coordinated Dialing Plans (CDPs) and Uniform Dialing Plans (UDPs). All nodes must conform uniformly to the adopted dialing plan. NMS does not support mixed CDP/UDP across a network and limits CDP support to Distant Steering Codes.

Table 68 summarizes the packaging requirements for NMS.

Additional documentation

For network applications, you should have the Northern Telecom Publications (NTPs) supporting ISDN listed in the front of this document. There are additional sets of NTPs supporting the ACD D package and ACD-MAX applications. Consult with your Northern Telecom representative for a complete list of supporting NTPs.

For NMS applications that use ACD, refer to these NTPs:

Automatic Call Distribution feature description (553-2671-110)

Automatic Call Distribution ACD management commands and reports (553-2671-112)

Network ACD description and operation (553-3671-120)

Network Message Services—Message Center

Network Message Services-Message Center (NMS-MC) allows a caller transparent access to a centralized message center over an ISDN PRI/ISL network.

These Message Center configurations are supported:

- ACD Message Center
- DN Message Center
- Attendant Message Center

For these types of Message Centers, the Message Indication Key (MIK) on a message taker's set is used to turn on Message Waiting Indication at a user telephone. The Message Cancellation Key (MCK) is used to turn off Message Waiting Indication.

The NMS-MC supports direct and indirect NMS-MC access across ISDN. Direct access is initiated by dialing the Message Center DN or pressing the Message Waiting Key (MWK). Indirect access occurs when a call is presented to the NMS-MC by any of the call redirection features supported by Network Call Redirection (NCRD) including

- Network Call Forward All Calls
- Network Call Forward No Answer
- Network Call Forward Busy
- Network Hunting

See the NCRD module in this document for further details.

Network Message Services—Meridian Mail

NMS-MM provides transparent access to the Meridian Mail system across the network. NMS-MM operates only between system machines supported by a single Meridian Mail server facility. Users on remote nodes configured as part of the NMS-MM server base have access to all the Meridian Mail features available on the local switch.

See the NCRD module when you consider the redirections that apply to your particular environment. Since Message Center support is on a customer-by-customer basis, configure your network accordingly. See *Message Center description and operation* (553-2691-100). In Meridian Mail applications, different network PBXs (nodes) must be configured with the same Meridian Mail server for proper messaging support. See the Meridian Mail suite of NTPs.

Direct calls for NMS-MM are initiated by dialing the message facility directly or pressing MWK on a properly programmed telephone. Functionality mimics current operations, including Auto-login with a user's password. See the appropriate NTP for a description of call functions.

Indirect calls are presented to the Meridian Mail server from call redirection services. NMS-MM relies on Network Call Redirection (NCRD) to provide the originally dialed and calling party numbers to the Meridian Mail server for message processing. NMS-MM supports Off-net Access through direct dialing.

Operating parameters

The following list describes the NMS operating parameters:

- PRI or ISL is needed for both direct and indirect Message Center calls.
- The NMS DN must be unique and still be able to be reached by means of PRI or ISL from all NMS users in the network, and vice versa.
- NMS supports Meridian 1 to Meridian 1 connections only.
- The local NMS-MM DN defined in each node must also be configured in the Meridian Mail server database, in the VSDN table.
- In-band End-to-End Signaling (EES) is required for NMS-MM at terminating and originating nodes.
- NMS-MM requires X11 release 16 NCRD interworking to provide full service.
- NMS-MM requires the Meridian Hospitality Voice Services package to provide link recovery enhancements for Meridian Link ISDN/AP.
- NMS-MM does not support international dialing.
- Only one Message Center DN can be defined for a telephone. Multiple Message Center types are not supported.
- The NMS does not support Trunk Steering Codes (TSCs).
- For complete functionality each node requires X11 release 16 or later software.

Feature interactions

Listed here are differences in networking applications which may impact Network Message Services operations.

- Password Suppression
 - Password Suppression is not supported accross a Meridian 1 network.

— Network Call Redirection (NCRD)

Indirect access to the NMS-Meridian Mail (NMS-MM) application is based on the NCRD package, which is broken down into the following areas:

- Call Forward All Calls and Call Forward No Answer (X11 release 14) and Call Forward Busy, Network Call Transfer, and Network Hunting (X11 release 16) provide the base for NMS indirect access.
- Attendant Extended Call presents the same information to Meridian Mail as Network Call Transfer except that the DN Update message is sent to the NMS-MM when the attendant releases the call. The connected party number is updated only when the attendant is released.
- NMS does not support incoming calls from CO Loop Start trunks because X11 release 14 NCRD does not redirect these calls. Calls that come into the switch from a CO Loop Start trunk cannot be redirected to another trunk by means of attendant extension or call redirection; these calls are blocked when redirection is activated.

— Barge-in Attendant

The attendant can barge-into an NMS-MM call at the terminating PBX. During barge-in, the user cannot use features that require switch effort, such as the Call Sender feature.

— Trunks

When a call is presented to the NMS-MM by means of a non-PRI or ISL trunk, the call is treated as an external call even if it is an on-network call. The external greeting is applied and the message is announced as from an external number.

- Meridian Hospitality Voice Services
NMS-MM requires the Meridian Hospitality Voice Services (MHVS) package in X11 release 16 to provide Meridian Link ISDN/AP protocol recovery treatment for link applications. All calls to the ACD Night Call Forward (NCFW) DN are redirected to the Meridian Mail server when the ISDN/AP link fails. Call treatment in NMS-MM is identical to the NCFW treatment. See the appropriate ACD NTP listed in “Additional documentation” on page 615.

ISDN requires that the network be equipped with either Coordinated Dialing Plan (CDP) or a Uniform Dialing Plan (UDP) throughout, but it does not support a mixture of both.

NMS does not support the following packages and options:

- Packet Transport Equipment Meridian Mail (MP)
- Multiple Message Center interworking

Feature packaging

Table 68 shows the packages NMS-Message Center requires per node.

Table 69 shows the package requirements per node for NMS-Meridian Mail.

See *X11 features and services* (553-3001-305) for X11 release software packages and their dependencies.

Table 68

Required feature packages for each NMS-Message Center node

Name	Mnem.	No.	Orig.	Tandem	Term.
End-to-End Signaling	EES	10	X		X
Basic Automatic Call Distribution *	BACD	40	X		X
Automatic Call Distribution Package A *	ACDA	45	X		X
Message Center	MWC	46	X		X
ISDN Signaling	ISDN	145	X	X	X
ISDN Primary Rate Access	PRA	146	X	X	X
OR					
ISDN Signaling Link	ISL	147	X	X	X
Advanced Network Services	NTWK	148	X	X	X
Network Message Services	NMS	175	X		X
* These packages may not be required for your particular Message Center application.					

Table 69
Required feature packages for each NMS-Meridian Mail node

Name	Mnem.	No.	Orig.	Tandem	Term.
End-to-End Signaling	EES	10	X		X
Integrated Message Service	IMS	35			X
Basic Automatic Call Distribution *	BACD	40	X		X
Automatic Call Distribution Package A *	ACDA	45	X		X
Message Center	MWC	46	X		X
Meridian Link ISDN/AP	IAP3P	77			X
ISDN Signaling	ISDN	145	X	X	X
ISDN Primary Rate Access	PRA	146	X	X	X
OR					
ISDN Signaling Link	ISL	147	X	X	X
Advanced Network Services	NTWK	148	X	X	X
Network Message Services	NMS	175	X		X
* These packages may not be required for your particular Message Center application.					

Feature implementation

For a description of all the prompts and responses for system software, see *X11 input/output guide* (553-3001-400).

Package 175, NMC, introduced in X11 release 15, was renamed NMS in X11 release 16 to cover both Meridian Mail and Message Center.

NMS operates only between Meridian 1 systems. NMS-MCs are configured on a customer-by-customer basis. NMS-MM operates only between machines supported by the same Meridian Mail server facility.

Note: In X11 release 15 and later, Network Message Services require ESN access code insertion. The configuration of ESN access code insertion is shown in Procedure 43 in this chapter. Also see “Electronic Switched Network interworking” on page 323.

To configure NMS, use Procedures 41 through 47. Refer also to Table 70 for NMS DN information.

Note: All these procedures apply to both NMS-MM and NMS-MC except for Procedure 45, which is Meridian Mail only.

Procedure 41
Use LD 17 to define the software release of each switch at the far end of each D-channel in the NMS network (X11 release 17 and earlier)

Prompt	Response	Description
REQ	NEW, CHG	
TYPE	CFN	Configuration database
ISDN	YES	
DCHI	1–15	D-channel to the far end
RLS	xx	Enter the X11 release of the far end. The minimum release for NMS-MC is 15 and for NMS-MM is 16.

Procedure 42

Use LD 17 to define the software release of each switch at the far end of each D-channel in the NMS network (X11 release 18 and later)

Prompt	Response	Description
REQ	CHG	Change
TYPE	CFN	Configuration record
ADAN	CHG DCH 0–63	Change D-channel information
RLS	xx	Enter the X11 release of the far end. The minimum release for NMS-MC is 15 and for NMS-MM is 16.

Procedure 43

Use LD 15 to enable Message Services

Prompt	Response	Description
REQ	CHG	Change data
TYPE	CDB IMS_DATA	Customer Data Block Integrated Message Services data (Release 21 gate opener)
- IMA	YES	Enable Integrated Message Services

Procedure 44**Create an ISDN transport signaling database in LD 16**

Prompt	Response	Description
REQ	NEW, CHG	
TYPE	RDB	Route Data Block
CUST	xx	Customer number or range of customer numbers
ROUT		Route number
ISDN	YES	ISDN option
INAC	(NO),YES	Insert Access Code. INAC = YES is required for ISDN network features. This prompt only appears if the route type is a tie trunk.
PNI	1–32700	Customer private identifier—unique to a customer. This is the private identifier of the target switch and must be the same number used for PNI in LD 15 for remote customer. Matches PNI in LD 16 at remote to PNI in LD 15 at local site.
NCRD	YES	Network Call Redirection
TRO	YES	Trunk Route Optimization allowed (denied) on the route

Procedure 45**Use LD 23 to define the Meridian Mail ACD group in the remote switch (NMS-MM only)**

Prompt	Response	Description
REQ	CHG	Change existing data
TYPE	ACD	Automatic Call Distribution data block
CUST	0–99	Customer number
ACDN	xxxxxxx	The Meridian Mail DN
MWC	YES	Message Center services

Note: Do not define any ACD agents for this ACD group to allow automatic redirection to the ACD Night Call Forward DN (NFCW).

Procedure 45**Use LD 23 to define the Meridian Mail ACD group in the remote switch (NMS-MM only)**

Prompt	Response	Description
MAXP	xxxx	Maximum number of agent positions
NCFW	x..x	Night Call Forward DN, where x...x is the NMS-DN. If network DN, include AC1/AC2.

Note: Do not define any ACD agents for this ACD group to allow automatic redirection to the ACD Night Call Forward DN (NFCW).

Procedure 46**Use LD 11 to define the Network Message Services DN for each telephone**

Prompt	Response	Description
REQ	CHG	Change existing data
TYPE	aaa	Telephone type
...		
FDN	x..x	Flexible Call Forward No Answer NMS-DN. See Note.
...		
CLS	MWA	Message Waiting Allowed Class of Service
...		
EFD	x..x	Call Forward by Call Type—External No Answer to NMS-DN.
EHT	x x	Call Forward by Call Type—External Hunt to NMS-DN
HUNT	x	Hunt to NMS-DN
KEY	xx MWK x...x	Message Waiting Key, where x..x is the NMS-DN. See Note.

Note: The NMS-DN can be the local or the network ACD DN.

Procedure 47**Use LD 10 to define the Network Message Services DN for each telephone**

Prompt	Response	Description
REQ	CHG	
FTR	FDN x..x	Flexible Call Forward No Answer NMS-DN, x..x is the NMS-DN. The NMS-DN can be the local or the network DN. If network DN, include AC1/AC2.

Table 70**Network Message Services DN (applies to both NMS-MC and NMS-MM)**

Call type	Network Message Services DN (NMS-DN)	Number of digits
Private call using Uniform Dialing Plan (UDP)	ACC + LOC + XXXX	8 to 9
Private call using Coordinated Dialing Plan (CDP)	DSC + X..X	10 maximum
Public numbering plan	ACC + (1) + NPA + NXX + XXXX ACC + (1) + NXX + XXXX	14 maximum

Feature testing

To verify NMS-MM, perform the following steps:

- 1** Coordinate with far end personnel. Place a call to a busy station at the far end over a PRI trunk.
- 2** Let the call forward to the Network Message Services and leave a message.
- 3** Verify that the message waiting lamp is lit on the called station.
- 4** Log into Meridian Mail and listen to the message.
- 5** Use the Call Sender command to call the person who left the message.
- 6** Verify all Meridian Mail features are available by the far end user.